

Name Key

Date _____

Ch 6 Review

Solve.

1. $(x+5)^2 + 25 = 0$

$(x+5)^2 = -25$

$x = -5 \pm 5i$

3. $x^2 + 8x + 6 = 0$

$$\frac{-8 \pm \sqrt{64 - 4(6)}}{2(1)} = \frac{-8 \pm 2\sqrt{10}}{2} = -4 \pm \sqrt{10}$$

2. $\sqrt{(x-2)^2} = \sqrt{12}$

$x-2 = \pm 2\sqrt{3}$

$x = 2 \pm 2\sqrt{3}$

4. $2x^2 + 5x + 3 = 0$

$2x^2 + 3x + 2x + 3 = 0$

$x(2x+3) + 1(2x+3) = 0$

$(x+1)(2x+3) = 0$

$\{-1, -\frac{3}{2}\}$

 $b^2 - 4ac$ Determine the nature of the roots. (without solving)

5. $2x^2 + 9x + 3 = 0$

$81 - 4(2)(3) = 57$

2 IR irrational roots

7. $4x^2 + 2x - 110 = 0$

$4 - 4(4)(-110)$

1764

2 TR Rational

6. $3x^2 - 6x + 3 = 0$

$36 - 4(3)(3) = 0$

TR double root

8. Determine the value for k such that

$3x^2 + 6x + k = 0$ has a double root.

$36 - 4(3)k = 0$

$36 = 12k$

$3 = k$

9. The height of a projectile is given by the following formula $h = 100t - 16t^2$.

What is the maximum height of the object?

$$\frac{-100}{2(-16)} = \frac{-100}{-32} = 3.125$$

$V(3.125, 156.25)$

$$h = 100(3.125) - 16(3.125)^2$$

156.25

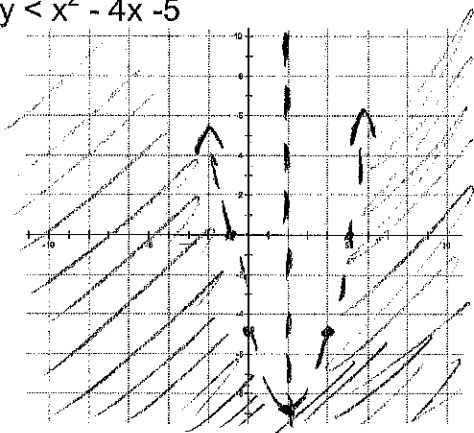
156.25 ft

$\frac{4}{2}$

$4 - 8 = -4$

10. Graph

a. $y < x^2 - 4x - 5$



$V(2, -9)$

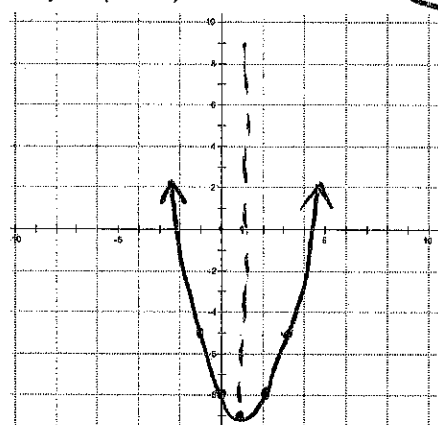
a.o.s $x=2$

y-int (0, -5)

(-1, 0) (5, 0)

(5, 0)

b. $y = (x-1)^2 - 9$



$V(1, -9)$

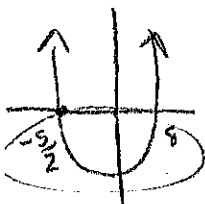
a.o.s $x=1$

y-int (0, -8)

(2, -8)

(-1, -5)

(3, -5)



$$\begin{array}{r} -80 \\ 5 \times -16 \\ -11 \end{array}$$

Solve.

11. $2x^2 - 11x - 40 < 0$

$$2x^2 + 5x - 16x - 40 < 0$$

$$x(2x+5) - 8(2x+5) < 0$$

$$(x-8)(2x+5) < 0$$

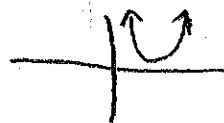
$$\begin{array}{cc} 8 & -5/2 \end{array}$$

$$\left(-\frac{5}{2}, 8\right)$$

$$\left\{x \mid -\frac{5}{2} < x < 8\right\}$$

12. $3x^2 - 4x + 8 > 0$

TR



$V(-1, 2)$

Matching. Match the equation with the correct letter of the graph.

13. $y - 2 = (x + 1)^2$ c

$V(-2, 1)$

14. $y = -\frac{1}{2}(x + 2)^2 + 1$ d

$V(0, 2)$

15. $y - x^2 = 2$ b

$y = x^2 + 2$

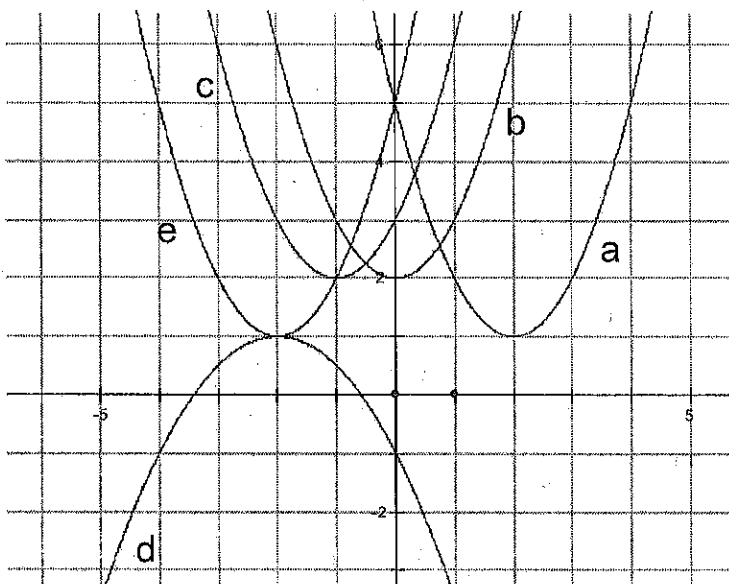
$V(-2, 1)$

16. $y = x^2 + 4x + 5$ e

$-\frac{b}{2a}$

$V(2, 1)$

17. $y = x^2 - 4x + 5$ a



Write the quadratic equation with the given roots.

18. $\{-3, -3\}$

$S = -6$

$P = 9$

$x^2 + 6x + 9 = 0$

19. $\{5, -3\}$

$S = 2$

$P = -15$

$x^2 - 2x - 15 = 0$

20. $\{4, \frac{3}{4}\}$

$S = \frac{19}{4}$

$P = 3$

$x^2 - \frac{19}{4}x + 3 = 0$

$4x^2 - 19x + 12 = 0$

21. $\{3i, -3i\}$

$S = 0$

$P = 9$

$x^2 + 9 = 0$

22. $\{5 + 3i, 5 - 3i\}$

$S = 10$

$P = 34$

$x^2 - 10x + 34 = 0$

23. $\{2 + \sqrt{5}, 2 - \sqrt{5}\}$

$S = 4$

$P = -1$

$x^2 - 4x - 1 = 0$

24. Find k , if one root is -4 for the equation: $2x^2 + kx - 12 = 0$.

$2(-4)^2 + k(-4) - 12 = 0$

$32 - 4k - 12 = 0$

$20 = 4k$

$k = 5$

25. The sum of the lengths of the legs of a right triangle is 10cm. What is the maximum area of such a triangle? ($A = \frac{1}{2}bh$) (The height and base are the legs.)

$A(x) = \frac{1}{2}x(10-x)$

$10x - x^2$

$A(x) = 5x - \frac{1}{2}x^2$

$V(-\frac{b}{2a})$

$-\frac{-5}{2(-\frac{1}{2})} = 5$

$V(5, 12.5)$

$\text{Max Area } 12.5\text{cm}^2$

